Claims

1.   A polypeptide comprising an amino acid sequence N1N2X1X2X3N3X4N4X5, wherein N1, N2, N3, and N4 are aromatic amino acids, and X1-X5 are any amino acids, and wherein the polypeptide binds specifically to a ChemerinR polypeptide.

5   2.   A polypeptide of claim 1, wherein N1 is tyrosine, N2-N4 are phenylalanine.

3.   A polypeptide of claim 1, wherein the amino acid sequence is YFX1X2X3FX4FX5, wherein X1-X5 are any amino acid.

4.   A polypeptide according to claim 3, wherein X1 is proline, X2, X4, and X5 are selected from group consisting of glycine, alanine, valine, leucine, isoleucine, serine, and threonine, and
10   X3 is either glutamine or asparagine.

5.   A polypeptide of claim 1, wherein the amino acid sequence is YFPGQFAFS.

6.   A polypeptide of claim 1, wherein the amino acid sequence is QRAGEDPHSFYFPGQFAFS.

7.   A polypeptide comprising an amino acid sequence SEQ ID No. 73 (the 157 aa truncated
15   sequence).

8.   A polypeptide comprising an amino acid sequence SEQ ID No. 12 (the 143 aa truncated sequence, Prochemerin).

9.   A polypeptide comprising an amino acid sequence SEQ ID No. 14 (the 137 aa truncated sequence, Chemerin).

20   10.   The polypeptide in claim 1, wherein the polypeptide is labeled with a moiety selected from the group consisting of a radioisotope, a fluorophore, a quencher of fluorescence, an enzyme, an affinity tag, and an epitope tag.

11.   A nucleic acid sequence encoding the amino acid sequence of claim 5.

12.   A nucleic acid sequence encoding the amino acid sequence of claim 6.

25   13.   A nucleic acid sequence encoding the amino acid sequence of claim 7.

14.   A nucleic acid sequence encoding the amino acid sequence of claim 8.

15.   A nucleic acid sequence encoding the amino acid sequence of claim 9.

16.   An expression vector comprising the coding sequence in any one of claims 11-15.

17.   An expression vector of claim 16, wherein the expressing vector is a plasmid DNA
30   expression vector.

18.   An expression vector of claim 16, wherein the expressing vector is an adenovirus vector comprising the coding sequence under the control of tissue specific, tumor selective promoter.

19.   A transgenic animal transfected with an expression vector according to claim 16.

20.   A composition comprising the polypeptide in any one of claims 1-10.

5   21.   A composition comprising the nucleic acid sequence in any one of claims 11-15.

22.   A therapeutic composition comprising the polypeptide in any one of claims 1-10.

23.   A therapeutic composition comprising the nucleic acid sequence in any one of claims 11-15.

24.   A method of inhibiting cell proliferation comprising administering to a cell the
10   composition in any one of claims 20.

25.   A method of inhibiting cell proliferation comprising administering to a cell the composition in any one of claims 21.

26.   A method of inhibiting cell proliferation comprising administering to a cell the expression vector according to claim 16.

15   27.   A method of treating a subject with a disease or disorder comprising administering to the subject a therapeutically effective amount of the composition according claim 22.

28.   A method of treating a subject with a disease or disorder comprising administering to the subject a therapeutically effective amount of the composition according claim 23.

29.   A method of treating a subject with a disease or disorder comprising administering to the
20   subject the expression vector according to claim 16.

30.   The method according to claim 27, wherein the method is *ex vivo* gene therapy.

31.   The method according to claim 28, wherein the method is *ex vivo* gene therapy.

32.   The method according to claim 27, wherein the method is *in vivo* gene therapy.

33.   The method according to claim 28, wherein the method is *in vivo* gene therapy.

25   34.   A method according to any one of claims 27-33, wherein the disease is selected from the group consisting of: neoplasms located in the: colon, abdomen, bone, breast, digestive system, liver, pancreas, peritoneum, endocrine glands (adrenal, parathyroid, pituitary, testicles, ovary, thymus, thyroid), eye, head and neck, nervous (central and peripheral), lymphatic system, pelvic, skin, soft tissue, spleen, thoracic, and urogenital, as well as hypergammaglobulinemia,
30   lymphoproliferative diseases, disorders, and/or conditions, paraproteinemias, purpura, sarcoidosis, Sezary Syndrome, Waldenstron's Macroglobulinemia, Gaucher's Disease, histiocytosis, and any other hyperproliferative disease.

35.   An antibody that selectively binds to the polypeptide in claim 1.

36.   The antibody of claim 35, wherein the antibody is an agonist of Proprechemerin, or Prechemerin, or Chemerin, or analogs or fragments thereof.

37.   The antibody of claim 35, wherein the antibody is an antagonist of Proprechemerin, or Prechemerin, or Chemerin, or analogs or fragments thereof.

38.   The antibody of claim 35, wherein the antibody inhibits the binding of Proprechemerin, Prechemerin, or Chemerin, or analogs or fragments thereof, to ChemerinR.

39.   The antibody of claim 35, wherein the antibody is a monoclonal antibody.

40.   The antibody of claim 35, wherein the antibody is a monoclonal antibody that binds to an epitope comprising FSKALPRS.

41.   The antibody according to any one of claims 35, wherein the antibody is conjugated or coupled to a detectable label, a radioactive label, an enzyme, a fluorescent label, a luminescent label, a bioluminescent label, or a therapeutic agent.

42.   The antibody of claim 41, wherein the therapeutic agent is an antimetabolite, an alkylating agent, an antibotic, a growth factor, a cytokine, a cytotoxic agent, a toxin, or an anti-angiogenic agent.

43.   A method of identifying an agent that modulates the interaction between a Chemerin and a ChemerinR, said method comprising:

       (a)   contacting a ChemerinR polypeptide with a Chemerin polypeptide in the presence and absence of a candidate modulator under conditions permitting the binding of said Chemerin polypeptide to said ChemerinR polypeptide; and

       (b)   measuring the binding of said ChemerinR polypeptide to said Chemerin polypeptide, wherein a decrease in binding in the presence of said candidate modulator, relative to the binding in the absence of said candidate modulator, identifies said candidate modulator as an agent that modulates the function of ChemerinR.

44.   The method of claim 43, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6, and the Chemerin polypeptide sequence is the polypeptide sequence in claim 1.

45.   The method of claim 43, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6, and the Chemerin polypeptide sequence is the polypeptide sequence is SEQ ID No. 14 (Chemerin).

46.   A method of detecting the presence, in a sample, of an agent that modulates the interaction between a Chemerin and a ChemerinR polypeptide in a sample, said method comprising:

(a)   contacting a ChemerinR polypeptide with a Chemerin polypeptide in the presence and absence of said sample under conditions permitting the binding of said Chemerin polypeptide to said ChemerinR polypeptide; and

5   (b)   measuring the binding of said ChemerinR polypeptide to said Chemerin polypeptide, wherein a decrease in binding in the presence of said sample, relative to the binding in the absence of said candidate modulator, indicates the presence, in said sample of an agent that modulates the function of ChemerinR.

47.   The method of claim 46, wherein the ChemerinR polypeptide sequence is SEQ ID No: 2, or 4, or 6 and the Chemerin polypeptide sequence is the polypeptide sequence in claim 1.

10   48.   The method of claim 46, wherein the ChemerinR polypeptide sequence is SEQ ID No: 2, or 4, or 6 and the Chemerin polypeptide sequence is SEQ ID No. 14 (Chemerin).

49.   A method of identifying an agent that modulates the function of ChemerinR, said comprising:

(a)   contacting a ChemerinR polypeptide with a Chemerin polypeptide in the presence
15   and absence of a candidate modulator; and

(b)   measuring a signaling activity of said ChemerinR polypeptide, wherein a change in the activity in the presence of said candidate modulator relative to the activity in the absence of said candidate modulator identifies said candidate modulator as an agent that modulates the function of chamerinR.

20   50.   The method of claim 49, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6, and the Chemerin polypeptide sequence is the polypeptide sequence in claim 1.

51.   The method of claim 49, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6, and the Chemerin polypeptide sequence is SEQ ID No. 14 (Chemerin).

52.   A method of identifying an agent that modulates the function of ChemerinR, said
25   comprising:

(a)   contacting a ChemerinR polypeptide with a candidate modulator;

(b)   measuring a signaling activity of said ChemerinR polypeptide in the presence of said candidate modulator; and

(c)   comparing said activity measured in the presence of said candidate modulator to
30   said activity measured in a sample in which said ChemerinR polypeptide is contacted with a Chemerin polypeptide at its EC_{50}, wherein said candidate modulator is identified as an agent that modulates the function of ChemerinR when the amount of said activity measured in the presence of said candidate modulator is at least 50% of the amount induced by said Chemerin polypeptide present at its EC_{50}.

53.   The method of claim 52, wherein the ChemerinR polypeptide sequence is SEQ ID No: 2, or 4, or 6 and the Chemerin polypeptide sequence is the polypeptide sequence in claim 1.

54.   The method of claim 52, wherein the ChemerinR polypeptide sequence is SEQ ID No: 2, or 4, or 6 and the Chemerin polypeptide sequence is SEQ ID No. 14 (Chemerin).

5   55.   A method of detecting the presence, in a sample, of an agent that modulates the function of ChemerinR, said method comprising:

        (a)   contacting a ChemerinR polypeptide with a Chemerin polypeptide in the presence and absence of a candidate modulator;

        (b)   measuring a signaling activity of said ChemerinR polypeptide in the presence of
10   said candidate modulator; and

        (c)   comparing the amount of said activity measured in a reaction containing ChemerinR and Chemerin polypeptides without said sample to the amount of said activity measured in a reaction cintaining ChemerinR, Chemerin, and said sample, wherein a change in said activity in the presence of said sample relative to the activity in the absence of said sample
15   indicates the presence, in said sample, of an agent that modulates the function of ChemerinR.

56.   The method of claim 55, wherein the ChemerinR polypeptide sequence is SEQ ID No: 2, or 4, or 6 and the Chemerin polypeptide sequence is the polypeptide sequence in claim 1.

57.   The method of claim 55, wherein the ChemerinR polypeptide sequence is SEQ ID No: 2, or 4, or 6 and the Chemerin polypeptide sequence is SEQ ID No. 14 (Chemerin).

20   58.   A method of detecting the presence, in a sample, of an agent that modulates the function of ChemerinR, said method comprising:

        (a)   contacting a ChemerinR polypeptide with a candidate modulator;

        (b)   measuring a signaling activity of said ChemerinR polypeptide in the presence of said sample; and

25   (c)   comparing said activity measured in the presence of said sample to said activity measured in reaction in which said ChemerinR polypeptide is contacted with a Chemerin polypeptide at its EC_{50}, wherein said candidate modulator is identified as an agent that modulates the function of ChemerinR when the amount of said activity measured in the presence of said candidate modulator is at least 50% of the amount of the amount induced by said Chemerin
30   polypeptide present at its EC_{50}.

59.   The method of claim 58, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6 and the Chemerin polypeptide sequence is the polypeptide sequence in claim 1.

60.   The method of claim 58, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6 and the Chemerin polypeptide sequence is SEQ ID No. 14 (Chemerin).

61.   A method of diagnosing a disease or disorder characterized by dysregulation of ChemerinR signaling, said method comprising:

(a)   contacting a tissue sample with an antibody specific for a Chemerin polypeptide;

(b)   detecting binding of said antibody to said tissue sample; and

5   (c)   comparing the binding detected in step (b) with a standard, wherein a difference in binding relative said standard is diagnostic of a disease or disorder characterized dysregulation of ChemerinR.

62.   The method of claim 61, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6, and the Chemerin polypeptide sequence is the polypeptide sequence in claim 1.

10   63.   The method of claim 61, wherein the ChemerinR polypeptide sequence is SEQ ID No. 2, or 4, or 6, and the Chemerin polypeptide sequence is SEQ ID No. 14 (Chemerin).